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For one must remember that the Latin of botanic names is not classic Latin in many cases, and that the application of quantitative rules in the determination of accent is in such cases merely arbitrary.

I have hesitated for some months about publishing this paper, but it has seemed to me at last that, if the question of a spoken language of botany is to be raised, it is important to define such a language at its outset; and as I have felt that the definition here set forth is one most likely to obviate that potential store of silent synonyms, which must otherwise come upon us, I have suggested it as a basis for improvement.

LETTERS TO THE EDITOR.

** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as a proof of good faith.

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The Editor will be glad to publish any queries consonant with the character of the journal.

The Ling on the Pacific Slope.

THE ling (*Lota lota maculosa*) is found over a wide territory of North America east of the Rocky Mountains. I have taken it in the Great Lakes, at Winnipeg, in the Red River of the North, and it was reported to me at the head waters of the Saskatchewan, where it is said to ascend the smaller streams during the spawning season in such numbers that many could easily be killed by a single discharge of a shot gun. I have also taken it in the Missouri at Craig, Montana. In short, it is found in all three of the large water basins of the Atlantic slope—the Saskatchewan, St. Lawrence and Mississippi.

At Golden, B.C., on the Columbia, I was told by a fisherman that in Autumn he had caught ling five feet long on night lines, but I secured no further evidence of their occurrence in the Columbia system during my explorations in that region in August, 1892. When I reached Sicamous on Shuswap Lake in the Fraser system I was at once asked if I had secured any ling, of which they had some for dinner. As described to me, this ling appears to be a species of *Lota*. I did not succeed in getting any specimens at this place, as the Indians, who alone knew where to take them, had left on the morning of my arrival.

Since then I have received a large specimen from Golden, B.C., on the Columbia, which was secured for me by Mr. Green, manager of the Queen's Hotel at that place. A comparison of this specimen with one from Lake Michigan does not show any specific differences. The known distribution of *Lota lota maculosa* is therefore extended to the Pacific slope.

CARL H. EIGENMANN.

Bloomington, Ind.

The Native Calendar of Central America and Mexico.

I THINK it necessary to notice one or two errors in Dr. Brinton's article in *Science*, Feb. 16, for it seems he has made precisely the mistake he attributes to me. But first it is proper to say that, as his reference to Dr. Seler's explanation of *chic-chan* relates to a different work from that referred to by me, my criticism on this particular point was inapplicable.

If Dr. Brinton will examine my article in the *American Anthropologist*, he will see that my reference to the month names is limited expressly to those of the tribes of the Maya stock, hence his reference to the Nahautl names is out of place. It would be well for reviewers to read carefully and make themselves acquainted with that which they are reviewing.

And again Dr. Brinton has wholly missed the point in my reference to the Java week. I certainly thought it

was so clear that a person with but half an eye would see that the singular fact alluded to was that the Javanese, in assigning the days of their week and certain colors to the points of space, like the Zunis assigned a *mixed color* to the focus. A similar assignment of mixed color to the centre is seen on plate 12, Borgian Codex.

Further comparison of the Polynesian calendar with that of Mexico and Central America will be seen in a Bulletin now in press and soon to be issued.

CYRUS THOMAS.

BOOK REVIEWS.

Nagualism. A Study in Native American Folk-Lore and History. By DANIEL G. BRINTON, A.M., M.D., LL.D., D.Sc., Professor of American Archaeology and Linguistics in the University of Pennsylvania. Philadelphia, David McKay. 1894, 65 p., 8°, \$1.00.

"NAGUALISM" is a word which the reader will search for in vain, even in the Century Dictionary, although Dr. Brinton points out that it has been in occasional use in English and American books for seventy years past. It means the doctrines taught by the sect or secret society of the "Nagualists," who for more than three hundred years have perpetuated in Mexico and Central America many of the superstitions and rites of their ancestral heathenism, strongly infused with a debased Christianity; which did not prevent a cordial hatred of that religion and of the race which introduced it from being a cardinal maxim in their creed.

The Nagualists were also adepts in occult art, as skilful jugglers as those of India, telepaths, mesmerists and were-wolves. They had a secret slang or *argot* of their own, full of dark references and symbolic expressions, examples of which are given. The scenes of their mystic rites were glens and caves, where they held licentious orgies or ascetic penances. In the arts of divination and medicine they were acknowledged masters, and their horoscopes, founded on the ancient native calendar, were accepted with blind faith.

Historically, they played an important part in the history of the country, as they were the instigators of nearly all the revolts of the natives against the Spanish power, a fact overlooked by previous writers, but clearly enough shown in this volume. One of the most remarkable facts brought out is the prominence accorded to women in this secret order. They seem to have been the leading spirits, entrusted with its fullest powers, and often to have controlled its most momentous actions.

It will be seen that the subject of this monograph is an entirely new one, and of unusual interest.

Text-Book of Comparative Geology. By E. KAYSER, Ph.D., Professor of Geology in the University of Marburg. Translated and Edited by PHILIP LAKE, M.A., F.G.S. London, Swan, Sonnenschein and Co.; New York, Macmillan and Co. 1893, 596 illustrations, 426 p., \$4.50

AMONG the numerous valuable additions to geological literature in the year 1893, probably none will be better appreciated by English speaking readers than this new text-book of comparative geology. The subject is one much misunderstood and undervalued accordingly, not only by the English geologist, for whom the above work is primarily intended, but also here in America. It is frequently regarded as vain to attempt to correlate palæontological zones, and to compare closely one region with another, yet it is safe to say that without some such broad conception of the science little real progress can be made. It is truly remarked by the translator in his preface that it is only to the use of the comparative

method that we owe the striking generalizations of Neumayr and the philosophical views of Suess. Probably this distrust with which comparative geology is regarded by some scientists is due to the confusion of comparative geology proper with the efforts made by some "pigeon hole" geologists to bring together the formations in different widely separated quarters of the globe, and to illustrate in convenient tabular form their relations and equivalence. Opinions differ so widely regarding these correlations that probably no such table of equivalence could ever be constructed which would satisfy more than its author. We do not mean that such attempts are wrong in principle, but that they fail of scientific treatment and are necessarily blind to all that would throw a doubt, or disturb their harmony or proportion.

Comparative geology, as a science, however, is far from drawing such definite lines; it rather seeks to indicate the possibility of such equivalence and discusses not only the facts relative to the important questions of fauna and flora, but also marshals into place the physical features of structure and of inorganic grouping as well as of geographical relations. Not that Dr. Kayser has omitted tables of stratigraphical divisions, but these have been composed with greatest care and with the best understanding of the difficulties as well as of the facts which make the tabulated statement at the same time both desirable and to a certain extent possible.

Dr. Kayser's "Lehrbuch" appeared in 1891, and was immediately accepted by German geologists as a most important addition to their literature, and since that time has been universally regarded as the standard work upon the subject. The original work, which was intended for the use of German students, was naturally largely devoted to the study of the German formations, but even with this preference clearly marked there was yet more detail of extra German countries than had been usual in previous writings. Nor is this particular attention to Germany necessarily a fault, as in that country most detailed study has been given, and no special locality could have been better chosen as an illustration of continental Europe as a whole. Moreover, the author's intimate personal knowledge of the localities described gives additional satisfaction to the reader. Professor Lake, with a full realization of the peculiar insular seclusion of British geologists, has appreciated the value of this work to his fellows and in giving even a pure translation would have contributed a book of greatest value. He has done more than this, however, in his many additions descriptive of countries outside of Germany, particularly, of course, in treating of England, where, as in the former country, the geological series have been most carefully worked out. These additions are particularly numerous in the early portions of the work, becoming somewhat more limited in the discussion of the later formations, owing to the exigency of space. Doubtless in a second edition the writer will be permitted by his publisher to develop the work in proper proportion. As regards the American formations, the comparisons, though brief, are carefully drawn from our best authors, and the data are quite sufficient for their purpose. Further, as has been suggested in a recent review of this same work by Prof. R. D. Salisbury, data concerning American geology are more easily accessible to American students, thanks to the correlation essays of the United States Geological Survey, than data concerning European geology, which this volume supplies. Particularly is this true of the literature relating to the geology of the continent, which appears without exception in languages foreign to us and consequently difficult for reference.

¹⁴"Lehrbuch der Geologischen Formationskunde," Dr. Emanuel Kayser. Stuttgart, Ferdinand Enke, 1891.

Dr. Kayser is fortunate in his translator, Professor Lake, who has already attained a high position by original work in the same field, both at home and abroad, in connection with the Geological Survey of India. Mr. Lake has aimed to edit as well as to translate and together with the hearty coöperation of the author has brought the book fully up to date, at the same time introducing an extension of field, as has been indicated. In points of variance between continental and English teachings a review of the divergent tenets has in most cases been given, and where exceptionally unqualified statements have been made, though we may not be in full accord with the author, we must at least acknowledge that these statements represent the beliefs most widely accepted by the geologists of to-day.

We can give but a brief review of the contents of this volume, merely indicating the general treatment of the subject. An introduction defines the subject and its sub-divisions, the classification of the sedimentary strata, with a few words on the origin and early condition of the earth. Part I. treats of the Archæan or primitive rocks, their general character, mode of occurrence, origin, etc. The importance of this great group is fully recognized, though the space devoted to its discussion is rather limited. The Palæozoic or "Primary Group" is discussed in Part II., the order of discussion being that adopted throughout the work for each group and for each system, namely, after general remarks an historical summary, followed by a study in geographical grouping, of development and palæontology. It is in the treatment of the Palæozoic that the translator makes his greatest departure from the author, rejecting, here, the latter's division into the Cambrian and Silurian systems in favor of the English divisions of Cambrian, Ordovician, and Silurian. The Silurian of Lake, as is the custom of English writers, extends to the top of the Salina, or Waterlime, series, the Lower Helderberg and Oriskany being included in the second system of the Palæozoic, the Devonian.

The illustrations, which have been drawn in all cases from the original work, include seventy-three plates and seventy figures in the text, or, in all, 596 illustrations, and these form an invaluable part of the volume. The majority of these, which are all well executed, are devoted to palæontological subjects, but we have also many illustrations of structural and physical conditions. The typographical work is excellent, the choice of type, following the German edition in plan, is such as to bring out at a glance the subject matter of each paragraph and thus to add greatly to the value of the volume as one of reference. This is a matter often either neglected by the author or unsatisfactorily accomplished by the publisher, and it is rare that we find so carefully executed a plan as is here observed.

Edward Livingston Youmans; a Sketch of His Life. By JOHN FISKE. New York, D. Appleton and Co. \$2.

THIS is a book which all who are interested in the diffusion of scientific knowledge among the people, and especially all who knew Youmans personally, will like to read. It is written in the clear, smooth style of which Mr. Fiske is master, and as he was one of Youmans's most intimate friends, the biography has the authority as well as the interest which personal acquaintance gives. The most interesting chapters to us have been the earlier ones, which relate the story of Youmans's early life, his work on the farm and his struggles to obtain an education. Then follows the pathetic account of his blindness, which, though most of the time only partial,